

## ICE-41™ UPI-41™ IN-CIRCUIT EMULATOR

Extends Inteltec® Microcomputer Development System debug power to user configured system via an external cable and 40-pin plug, replacing the user UPI-41 device

Emulates user system UPI-41 device in real time

Allows user configured system to use static RAM memory for program debug

Provides hardware comparators for user designated break conditions

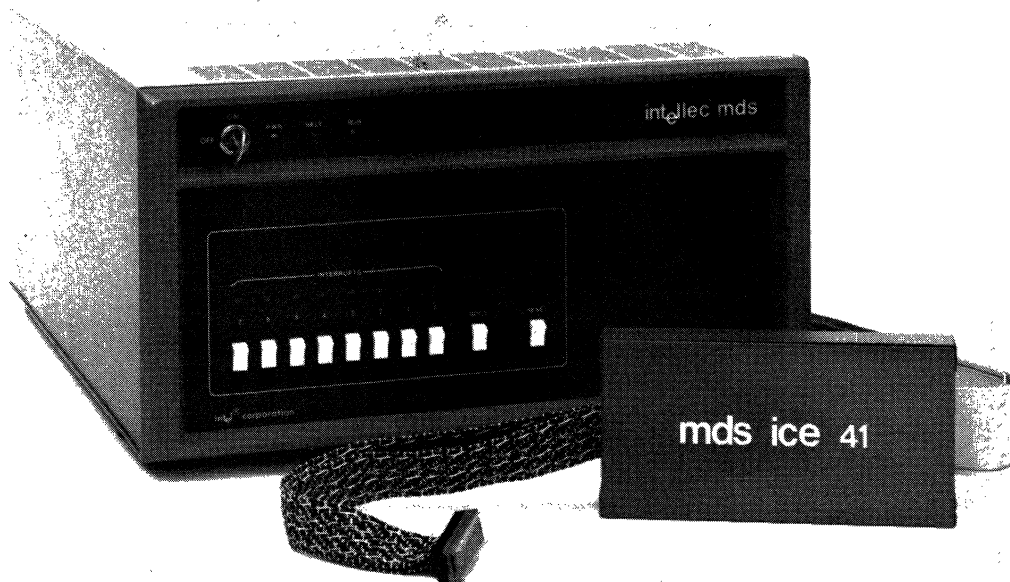
Eliminates the need for extraneous debugging tools residing in the user system

Collects address, data and UPI-41 status information on machine cycles emulated

Provides capability to examine and alter CPU registers, memory, flag values, and to examine pin and port values

Integrates hardware and software efforts early to save development time

The ICE-41™ Module is an Inteltec® System resident module that interfaces to any user configured UPI-41 system. With an ICE-41 Module as a replacement for a prototype system UPI-41 device, the designer can emulate the system UPI-41 device in real time, single-step the system's program, and use internal static RAM memory for user system debugging. Powerful debug capability is extended into the UPI-41 system while ICE-41 debug hardware and software remain inside the Inteltec System. Symbolic reference capability allows the designer to use meaningful symbols rather than absolute values when examining and modifying memory, registers, flags, and I/O ports in his system.



Attempting to mesh completed hardware and software in the final product can be costly and frustrating. The ICE-41 Module allows the designer to use his hardware and software to help debug each other as they are developed.

Hardware comparators provide the capability for breaking system emulation under specified conditions. An additional synchronization line allows the ICE-41 Module to break emulation on a condition outside the scope of the UPI-41 device, or, alternatively, allows the ICE-41 to signal an external device when a condition is recognized by the hardware comparators.

Static RAM memory is provided for program development. Programs can be easily altered during debug sessions without the need for program reassembly and the reprogramming of PROM memory. Internal UPI-41 registers and flags are accessible to the designer for checking program logic.

A trace buffer stores information on code executed, address, register, flag, and I/O operations during real time execution. The designer can examine this information after emulation is terminated to check the hardware/software interaction of his system.

The ICE-41 Module is a microcomputer system utilizing Intel's UPI-41 microprocessor as its nucleus. This system communicates with the Intellec System 8080 processor via direct memory access. Host processor commands and ICE-41 status are interchanged through a DMA channel. A parameter block resident in Intellec System main memory contains detailed configuration and status information transmitted in an emulation break.

ICE-41 hardware consists of two PC boards, which reside in the Intellec System chassis, and a cable assembly which interfaces to the user system. A 40-pin socket on the end of the cable assembly plugs directly into the socket provided for the user's UPI-41 device.

The ICE-41 software is an Intellec System program which provides the user with flexible, easy-to-use commands for defining breakpoints, initiating emulation, and interrogating and altering user system status recorded during emulation. A broad range of commands provides the user with maximum flexibility in describing the operation to be performed.

## SPECIFICATIONS

### ICE-41 OPERATING ENVIRONMENT

#### Required Hardware:

- Intellec® Microcomputer Development System
- System Console
- Intellec Diskette Operating System
- ICE-41 Module

#### Required Software:

- System Monitor
- ISIS-II
- ICE-41 Diskette-Based Software

### EQUIPMENT SUPPLIED

- Printed Circuit Boards
- Interface Cables and Buffer Module
- Operator's Manual
- Schematic Diagram
- ICE-41 Diskette-Based Software

## ORDERING INFORMATION

Part Number	Description
MDS-41-ICE	UPI-41 In-Circuit Emulator, Cable Assembly and Interactive Diskette Software included